REMARKS

Claims 42-81 are pending in the application and are presented for reconsideration and further examination in view of the foregoing amendments and the following remarks. By the foregoing claims 42-46, 48, 50-63, 65, 67-74, 76, 78, and 79-81 have been amended and new claims 82 and 83 have been added.

Obvious Type Double Patenting Rejection from 1/15/04

In the office action dated 1/15/04 the then pending claims were rejected for double patenting in view of U.S. patent no. 6,486,832. Applicant submits that such a rejection is not applicable to the current claims. The currently pending claims are patentably distinct from the claims of the '832 patent. For example, the current claims include methods and systems for determining the configuration of the antenna system that are not set forth in the claims of the '832 patent.

In addition, because that rejection was not contained in the outstanding office action and has not been applied to the current claims, Applicant requests that it be withdrawn.

Objection to the Drawings

In the Office Action the drawings were objected to. Substitute drawings are submitted herewith for approval by the Examiner.

Claim Objections

In the Office Action, claims 61 and 74 were objected to on the basis that they confuse transmitting and receiving. Both of those claims have been amended to clarify their meaning. Applicant thanks the Examiner for noting the confusing language.

Amendments to the Title

By the foregoing amendments the title has been replaced with a title more descriptive of the claimed invention.

Rejections Under Section 103

In the Office Action, claims 42-46, 48, 49, 51, 52, 56-64, 66, 67, 69-76 and 78-81 were rejected under 35 U.S.C. section 103(a) as being unpatentable over *Johansson* (U.S. Patent No. 6,487,423) in view of *Reudink* (U.S. Patent No. 6,363,263). Though the following remarks are directed specifically to independent claims 42, 51, 66, 67, 76 and 79, they apply with equal force to each of the claims which depend there from.

Amended claims 42, 76 and 79 are directed to antenna systems for use in establishing and maintaining wireless data links. Claim 42 includes, inter alia, "a controller coupled to the antenna system and configured to transmit at least one polling request through the antenna system, detect one or more responses to the at least one polling request while the antenna system is configured in at least two different selected patterns, determine a selected pattern for the antenna system based on the responses to the polling request received while the antenna system is configured in the at least two different selected patterns and transmit a signal to the antenna system indicating the selected pattern for the antenna system." Similarly, claim 76 includes, inter alia, "a controller coupled to the antenna and configured to . . . detect responses to the polling requests while the antenna is configured in at least two different selected patterns, determine a selected pattern of the antenna for transmitting or receiving based on the responses to the polling requests, transmit a signal to the antenna indicating the selected pattern of the antenna"; and claim 79 includes, a controller configured to "transmit polling requests through the antenna system, detect responses to the polling requests while the antenna system is oriented in at least two different directions, [and] determine a selected direction for the orientation of the gain of the antenna system based on the responses received while the antenna system was oriented in at least two different directions." No such systems are taught or suggested by the references of record alone, or in combination.

Johansson utilizes a rather complex and expensive system, including a covariance block 406, a direction of arrival block 407 and a weight calculation block 408, to determine its beam steering pattern. Those elements allow the beam steering to be determined from the receipt of a signal with the antenna in a single pattern (i.e., the antenna with no beam steering). In one embodiment of the present invention, utilizing the receipt of incoming signals with the antenna

in at least two different patterns allows for a comparative analysis between the two patterns to determine the selected pattern for transmission. That allows for an implementation which somewhat sacrifices time (the time required to receive signals with the antenna in at least two patterns) in order to avoid the use of some complex and expensive components that are required by the system described in *Johansson*.

Specifically, among other things, *Johansson* does not "detect responses to the at least one polling request while the antenna system is configured in at least two different selected patterns", and "determine a selected pattern for the antenna system based on the responses to the polling request" as set forth, for example, in claim 42. *Johansson* utilizes a single antenna pattern to determine the selected pattern of the antenna ("beam forming function", *Johansson* Col. 5, lines 56-58.). Specifically, the covariance block 406 shown in Figure 4a of *Johansson* receives the unweighted incoming signals from each of the antenna elements. That means that those signals are received and analyzed for purposes of selecting the beam steering or antenna pattern or direction with no beam steering. In other words, *Johansson* teaches determining the beam steering using raw received signals from the antenna in a single (without beam steering) pattern. The raw received signals are received via the same "antenna pattern" every time. This is confirmed by noting that the received signals analyzed for determining beam steering are taken from the antennas before weighting W1-W4. No orientation of the antenna elements of *Johansson* is used to determine a selected pattern or direction for the antenna. Therefore, *Johansson* does not teach or make obvious the claimed invention.

Similarly, the independent method claims are directed to methods of improving a wireless communication link using an antenna system having multiple patterns. Amended claim 51 includes, inter alia, "detecting responses to the request while the antenna system is configured in at least two different selected patterns during the scanning; determining a pattern of the antenna system based on the detected responses" Similarly, claim 66 includes, inter alia, "detecting a response signal to the communication while the antenna system is being steered through multiple directions; [and] selecting the direction of the antenna gain based upon at least one characteristic of the response signal received at different directions of the antenna gain"; and claim 67 includes "receiving one or more signals that request a response at the antenna system

when the antenna system is configured in at least two different selected patterns ; determining a pattern of the antenna system based on the received signals." For the reasons noted above, *Johansson* does not teach or suggest such methods.

Reudink does not provide any teaching which can overcome the shortcomings of *Johansson*. First, *Reudink* cannot properly be combined with *Johansson*. Combining the switched beam system of *Reudink* with *Johansson* is contrary to the stated goal of *Johansson* and in fact would destroy the claimed functionality of *Johansson*.

Johansson states that one of its principle objects is "to provide a method for accomplishing a flexible and inexpensive connection between two, preferably fixed, nodes in a mobile telephony system, where the connection carries data or voice traffic which is sensitive to delay due to multipath propagation and/or fading." (col. 2, lines 14-19.) *Johansson* goes on to state: "This object is fulfilled by a method for transferring data or voice traffic between first and second fixed nodes in a mobile radio system, where each node includes an adaptive phase controlled antenna unit." (col. 2, lines 20-23.) Substituting the "multiple narrow beam antenna system" described in *Reudink* is contrary to the stated objective of *Johansson* and would cause the modified system not to achieve that objective. For example, the complex adaptive phase controlled antenna system of *Johansson* generates "beams in the direction of the desired signal sources and nulls in the direction of the interferers." (col. 6, lines 3-6.) On the other hand, *Reudink* describes merely assigning a particular antenna to a particular radio. (See, e.g., *Reudink*, column 8, lines 1-6.) *Reudink* does not teach generating gains in a desired direction and nulls in a direction of interfering signals as is desired by *Johansson*. *Reudink* also requires multiple medias which *Johansson* does not have. Therefore, substituting the antenna system of *Reudink* into the system of *Johansson* would prevent the modified system from being able to achieve the desired goals of *Johansson*. Therefore, *Reudink* cannot properly be combined with *Johansson*.

Second, *Reudink* provides no teaching or suggestion to, inter alia, "transmit at least one polling request through the antenna system, detect one or more responses to the at least one polling request while the antenna system is configured in at least two different selected patterns, determine a selected pattern for the antenna system based on the responses to the polling request

received while the antenna system is configured in the at least two different selected patterns and transmit a signal to the antenna system indicating the selected pattern for the antenna system" as set forth for example in claim 42. *Reudink* does not describe detecting responses to a polling request while the antenna is configured in at least two different selected patterns. The antennas in *Reudink* do not appear to have the ability to change patterns. Rather, *Reudink* merely selects the antenna with the best signal for a particular radio channel at a particular time.

That is why, like *Johansson*, *Reudink* is a complex and expensive system which uses components like a scanning radio, splitters and filters. In one embodiment of the present invention, utilizing the receipt of incoming signals with the antenna in at least two different patterns allows for a comparative analysis between the two patterns to determine the selected pattern for transmission. That allows for an implementation which somewhat sacrifices time (the time required to receive signals with the antenna in at least two patterns) in order to avoid the use of some complex and expensive components that are required by the system described in *Reudink*.

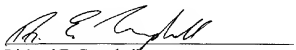
CONCLUSION

The Applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. Accordingly, amendments to the claims, the reasons therefor, and arguments in support of the patentability of the pending claim set are presented above. The claim amendments which are not specifically discussed in the above remarks are made in order to improve the clarity of claim language and to otherwise improve the capacity of the claims to particularly and distinctly point out the invention to those of skill in the art. In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding rejections is specifically requested.

If the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, the Examiner is respectfully requested to initiate the same with the undersigned.

Respectfully submitted,

Dated: April 24, 2006



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